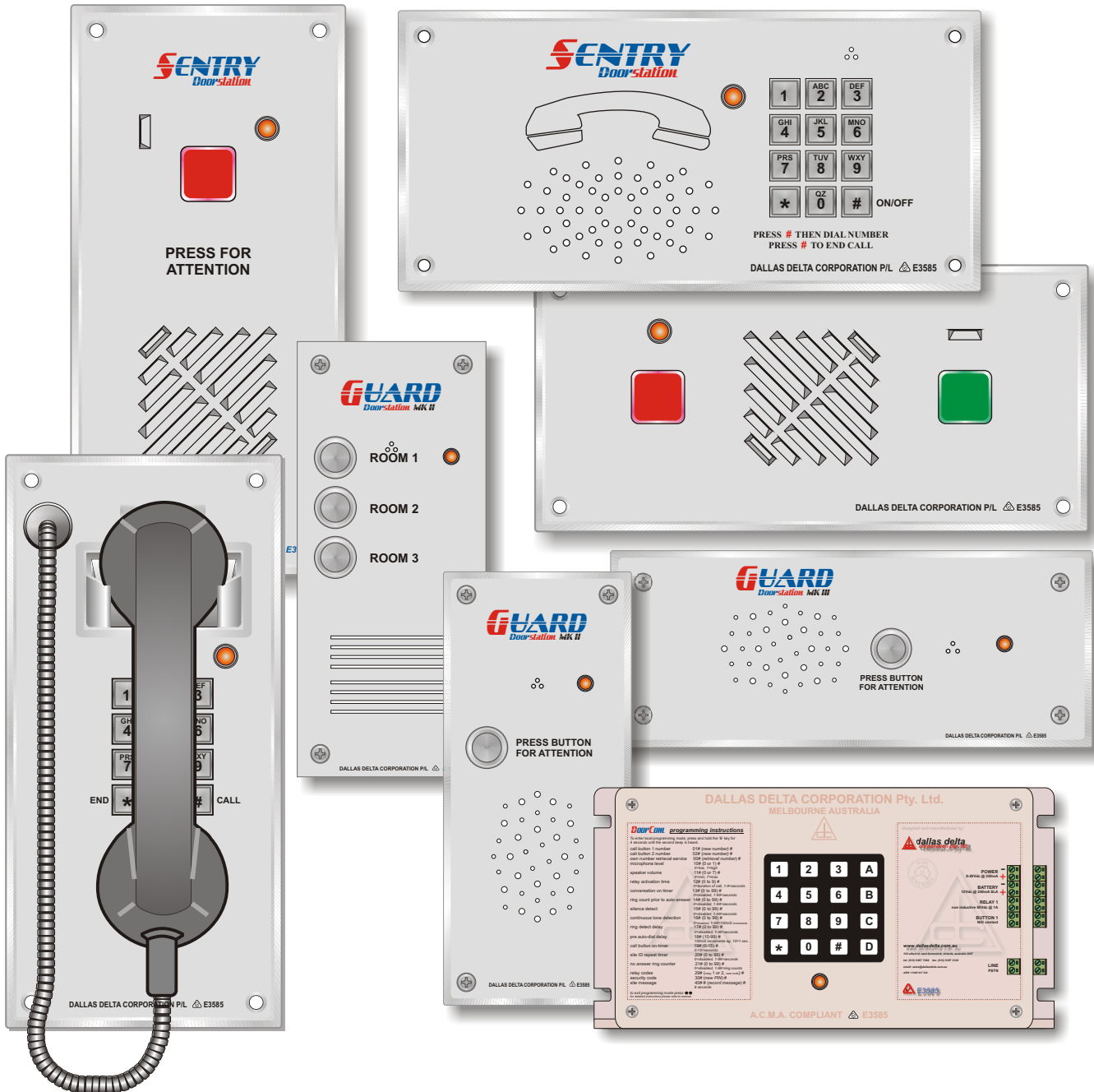


# DDC GSM/3G



**dallas delta**  
correlation pty. ltd.

102 Albert St. East Brunswick, 3057 Vic.

Tel: 613 93877388 Fax: 613 93873128

Email: [sales@dallasdelta.com](mailto:sales@dallasdelta.com)

[www.dallasdelta.com](http://www.dallasdelta.com)

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## 1.0 PRODUCT DESCRIPTION

**DDC GSM** is a multi-channel **GSM/3G** wireless Intercom system.

It works on the same technology platform as all mobile phones. It enables a call to be made from an entry point (Door, gate, etc.), to any telephone number (mobile or land line).

When a visitor presses the call button on the outdoor station it makes a voice call to a GSM/3G enabled mobile phone or land line phone.

When answered it allows the visitor to talk to the occupant who can open the door or gate using their phone.

If nobody answers, a second or third number is called if the alternative number feature is enabled.

The system also works as access control. It can use authorized mobile phones to open the gate like remote controls.

## 2.0 PRODUCT FEATURES

- 1.) Quad-band GSM/GPRS/EDGE and dual-band UMTS /HSDPA.
- 2.) Stores up to 1000 phone numbers (primary numbers).
- 3.) Two alternative numbers per primary number (local alt. number).
- 4.) Two global alternative numbers if required (over-rides local alt. numbers).
- 4.) Up to 10 keyless entries.
- 5.) 1000-number Caller Line Identification (CLI) for door access control.
- 6.) Keypad or button operation (up to 24 buttons).
- 7.) Low power operation mode.
- 8.) Handset or hands-free operation.
- 9.) One on-board relay, N.O. & N. C. Contacts.



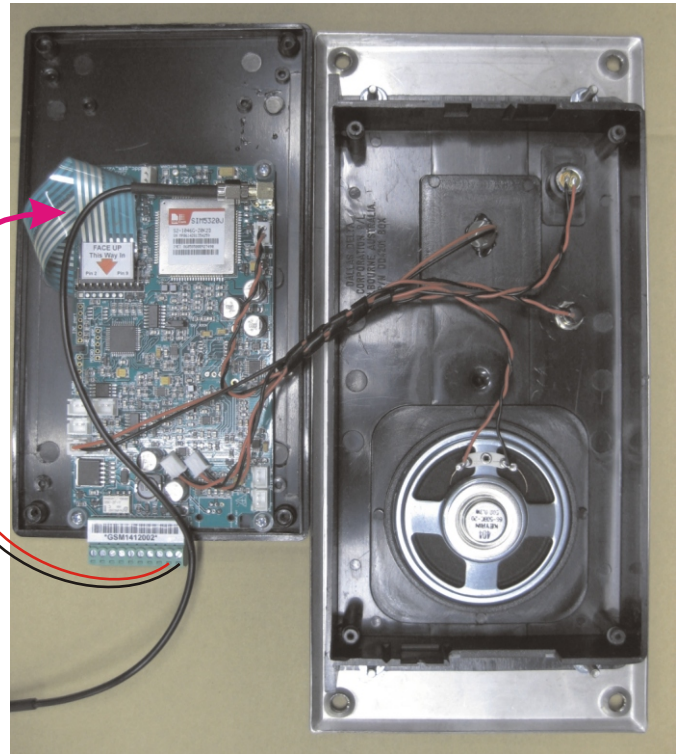
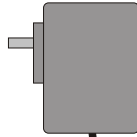
## 3.0 ACCESSING THE SIM HOLDER

### Warning:

Before any installation is made, ensure that the power pack is unplugged from the mains and that the power to the unit is off.

Before installation, a SIM card must be installed into the DDC GSM module. Open the module by unscrewing the four screws in each corner holding the lid in place to the GSM unit.

**POWER PACK  
INPUT**  
12 Vdc @ 500 mA



**Ribbon Cable**

Remove the keypad ribbon cable from the pins so that the SIM card holder can be accessed.

To install the SIM card, slide the SIM holder down towards the bottom of the module and then lift the holder up.

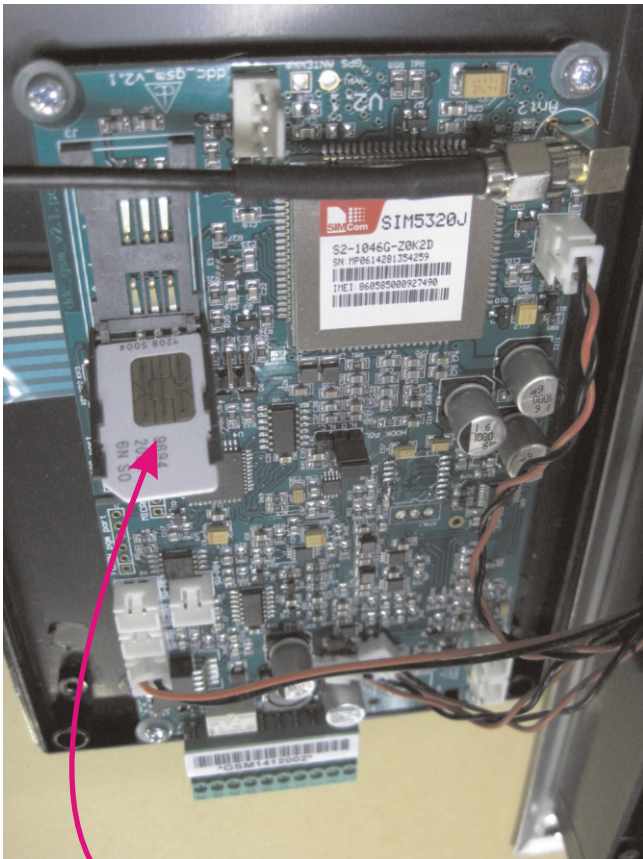


Photos shown are for indication only. Actual unit may differ from unit shown here.





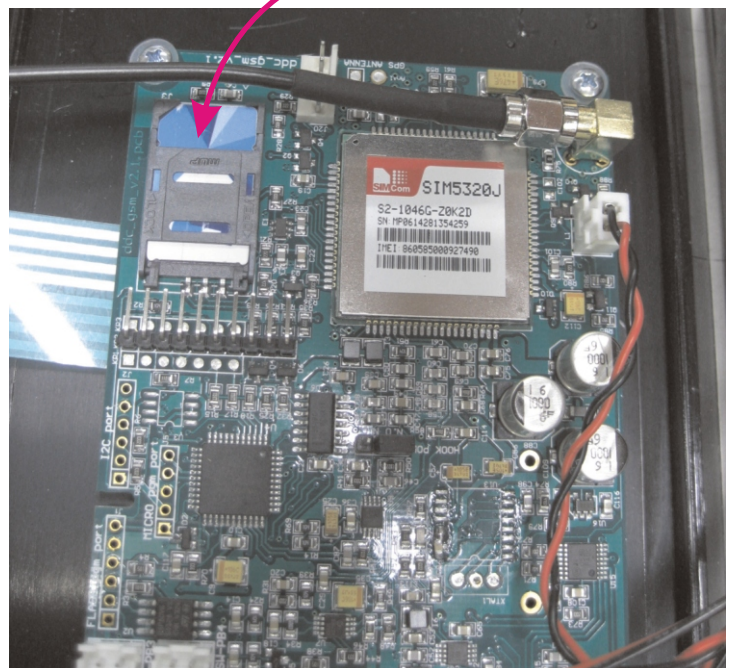
### 3.1 INSTALLING THE SIM CARD



**SIM Card Inserted**

Insert the SIM card in to the holder with the gold coloured terminals facing into the unit and the key of the SIM at the top left hand corner.

**SIM Card in place**



Do not touch the metal contacts on the bottom of the SIM card.

Carefully push the SIM card into the holder without bending the SIM card.

Now lock the SIM holder into place by sliding it back up to the top of the module until it locks.

Re-fit the ribbon cable to the connector in the correct orientation.

Replace the lid back on to the module.

---

## 4.0 SET-UP INSTRUCTIONS

> Connect the antenna.

Wire-up power to green connector see pin-out diagram on page 18).

Wire-up relay and external buttons if required (see pin-out diagram on page 18).

> When the SIM card is installed, power-up the unit.

A melody should play while the unit boots up. After approx 10 seconds the LED should begin to flash.

> The front LED on the unit should continuously blink which indicates that the unit has successfully registered to the mobile network.

If the LED is not flashing (i.e. On continually), it indicates the unit cannot log onto the network (eg antenna/signal issues), or the SIM is not fitted or is disabled.

> Enter programming mode, by pressing 'D' twice at the rear keypad.

An audible welcome message will be played upon entering the programming mode.

(Program mode will time out in 30 seconds if there is no keypad activity).

> Enter 1555#\*## to check the status of the SIM card.

If the unit reads 0, it indicates that the SIM card is in the ready state.

If the unit reads numbers 1 to 6, refer to section 5.10 for details.

> Read the signal strength by entering 1529#\*##.

A value between 10 and 25+ is an acceptable level.

> Program the phone number(s) in the desired phonebook locations.

See section 5.1 for details & examples.

> If SIM security PIN is required, store PIN number by pressing 1555#3\*0\*PIN number##.

See section 5.10 for more details

**Warning:** SIM PIN must be programmed if enabled. If PIN is incorrect, the SIM card will lock after 3 calls are attempted.

If the SIM PIN is locked please refer to section 5.10 for instructions about unlocking the SIM.

\*\*\* For hands-free operation, set jumper 'Hook Pol' to N.O.

\*\*\* For handset operation, set jumper 'Hook Pol' to N.C. And connect handset.

Unit is now ready for use.

### 4.1 - DIALLING OPTIONS

For units with a front keypad, there are two dialling modes: **Manual** (free-dial) or **Speed-dial**.

\* For manual mode, set option <1532> to 0 (zero)

\* For speed dial mode, set option <1532> to 1, 2, 3 or 4 (see section 5.4).

To make a manual call:

a). Dial the number on the keypad.

b). Press #, or wait until the 'dial timer' <option 1543> period has elapsed for call to be initiated.

c). To disconnect the call press #.

For units with a handset, a dial tone can be heard upon lifting the handset. Use keypad to make a call.

Hang up handset to disconnect the call.



## 5.0 PROGRAMMING OPTIONS

This section describes different options and features of the DDC GSM phone.

It explains the Caller Line Identification (CLI) feature, different programming modes, hot line, speed dial, alternative numbers, etc.

It explains how to store and retrieve phonebook entries residing in the phonebook storage.

### 5.1 - PHONEBOOK

This section describes how to store and retrieve phonebook entries residing in the phonebook storage. The user can store up to 1000 phone numbers.

The location of the phone number in the phonebook corresponds to the speed dial buttons.

The phonebook entries can also be used to enable the **Caller Line Identification (CLI)** feature, which enables a matching caller ID (i.e. Matching phone number) to get access to the on board relay.

The phonebook entries are encoded (programmed) using the following format/syntax:

**A/. For simple button-only operation:**

**PHONEBOOK LOCATION#PHONE NUMBER##**

**or**

**B/.For relay, button & alternative No operation:**

**PHONEBOOK LOCATION#PHONE NUMBER\*ALT No1\*ALT No2\*BUTTON OPERATION\*CLI\* START TIME\* END TIME\***

**“PHONEBOOK LOCATION”**: Locations 1 - 1000.

**“PHONE NUMBER”** (Primary number). Can only contains digits 0-9, up to 16 digits.

**“ALT 1 & 2”** Local alternative numbers 1 & 2. Can be set to call if primary number does not answer.

**“BUTTON OPERATION”**: Action that occurs when button or key is pressed. See section 5.2

**“CLI”**: **Caller Line Identification**, which will be used to trigger the on board relay for the duration specified by the relay timer.

#### Relay 1

(0-1)

The following is a table showing the various relay options:

CLI Value	Binary Code	Relay State
0	00000000	Relay 1 OFF
1	00000001	Relay 1 ON

**“START TIME”**: A 24 hour format number from 0000 to 2400, which indicates the START of the relay access time for the specified phone number.

**“END TIME”**: A 24 hour format number from 0000 to 2400, which indicates the END of the relay access time for the specified phone number.



## 5.1 – PHONEBOOK CONTINUED

Phone book entries can be made via: 1). Rear keypad or b). SMS or c).the 'Phonebook Editor'

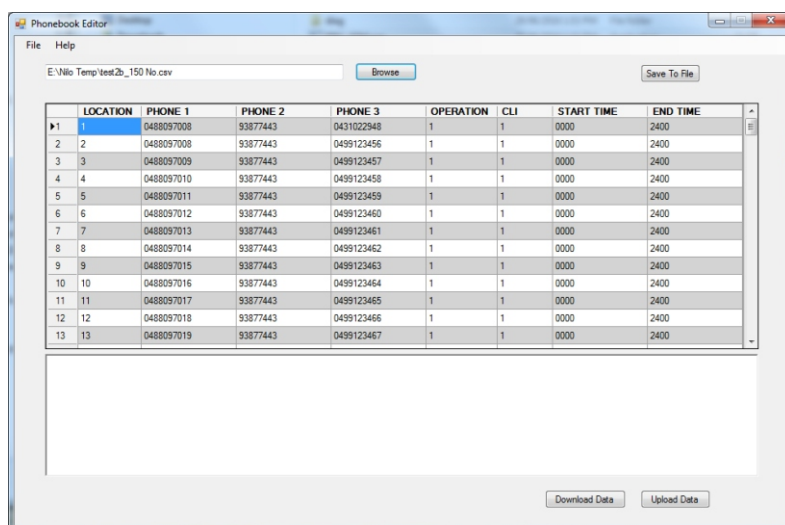
For rear keypad & SMS, use syntax as per previous page.

For Phonebook Editor, connect PC running the application to the unit via USB.

Enter phone book details manually into the application, or download from a CSV file.

To load to the GSM unit, click 'Download Data'.

To load the phone book from the GSM unit, click 'Upload Data'.



PHONEBOOK EDITOR

### Example Entries:

The following are some examples of how to enter the phone numbers via SMS or rear keypad:

Legend:

**Loc** - Phone book location. **N** - Phone number.

**ALT** - Alternative number. **Op.** - Button operation.

**Start time** - For CLI, the first time of day the relay can be turned on.

**End time** - For CLI, the last time of day the relay can be turned on.

Example Syntax	Loc	N	ALT 1	ALT 2	Op.	CLI	Start Time	End Time	Description
1#039493333##  Simple, dial-only phone book entry.  Entering the command above, will load default Alt, Op, CLI, Start & end times.	1	X	0	0	1	0	0000	2400	Receiving a call from 03949333, the unit will ring and none of the relays will turn on.  When speed dial button 1, or key 1 is pressed, the unit will ring 03949333.
2#040344444*0*0*1*1##  Relay operation via CLI.  Requires manual entry of: Alt No. (Zero in this case), Op, CLI.	2	X	0	0	1	1	0000	2400	When receiving a call from 040344444, the unit will NOT ring, the call will be terminated, and relay 1 will turn ON.  When speed dial button 2, or key 2 is pressed, the unit will ring 040344444.
40#044444444*0*0*1*1*0945##  Timed relay operation via CLI.  Requires manual entry of: Alt No. (Zero in this case), Op, CLI, Start time.	40	X	0	0	1	1	0945	2400	When receiving a call from 044444444 after 09:45, the unit will NOT ring, the call will be terminated, and relay 1 will turn ON.  Receiving a call from 044444444 before 09:45 will ring unit only.  When speed dial key 40 is pressed, the unit will ring 044444444 at any time.





## 5.1 – PHONEBOOK CONTINUED

Example Syntax	Loc	N	ALT 1	ALT 2	Op.	CLI	Start Time	End Time	Description
100#93877388*0*0*1*1*0945*1730##  Timed relay operation via CLI.  Requires manual entry of: Alt No. (Zero in this case), Op, CLI, Times.	100	X	0	0	1	1	0945	1730	When receiving a call from 93877388 after 09:45, the unit will NOT ring, the call will be terminated, and relay 1 will turn ON. Receiving a call from 93877388 before 09:45 will ring unit only. When speed dial key 100 is pressed, the unit will ring 93877388 at any time.
99#93877388*0*0*2*1*0900*1730##  Timed relay operation via CLI & SMS send.  Requires manual entry of: Alt No. (Zero in this case), Op, CLI, Times.	99	X	0	0	2	1	0900	1730	When receiving a call from 93877388 (between 9:00 and 17:30) the unit will NOT ring and the call will be terminated, and relay 1 will turn ON. If the keypad is setup for speed dial the unit will send SMS to 93877388 if keys [9] [9] are pressed.

For the CLI feature to function accurately the user must enter a unique phone number in each location, duplicated entries in the phonebook, will give different access priorities.

The CLI feature will only work if the Caller Line Identification for the incoming call is visible to the mobile network, please notify the caller to enable this feature in his/her phone.

The unit synchronises its real time clock from the mobile network,  
 If the network service provider does not provide this feature the relay access time will not work.  
 If necessary, check network local time by using command <1666> e.g. 1666 # \* # #

The user may not be able to access the phonebook if the SIM card is not inserted or faulty.



## 5.2 – BUTTON OPERATION

The Button Operation is the task that will be performed when the button is pressed while the unit is in idle state.

The button number is a four bit binary number. Each bit represents the on/off state of the operations.

There are currently four operations that the button can perform. The default operation is to dial only. The voice call bit takes precedence over the SMS.

Bit 4	Bit 3	Bit 2	Bit 1
Relay operation	Play message	SMS	Voice call

The following are examples of different operations:

Binary code	Value	Description
0000	0	No operation
0001	1	Dial number stored on this phone book location (default)
0010	2	SMS
0011	3	Dial number
0100	4	Play stored message
0101	5	Call and Play message
0101	6	Send SMS and play message
1000	8	Relay operation
1001	9	Make a phone call and turn on relay

## 5.3 – HOT LINE NUMBER DIALING

This feature is only available for the unit with handset fitted.

The unit will immediately dial the phone number stored by command <1500> whenever the handset is lifted. This feature can be disabled by storing a value of zero in option <1500>.

## 5.4 – SPEED DIAL

Depending on the hardware configuration of the product, the unit can support up to 28 dial buttons, each of these buttons are associated with a single entry in the phonebook.

By pressing one of these buttons the unit will dial the phone number in the phonebook memory location.

The keypad keys can be used to dial phonebook locations by configuring the number of digits required using command <1532>

e.g. Button 15 (phonebook location 15), set <1532> to 2.

The unit will wait for either this number of digits to be entered by the keypad or the dial timeout to expire, to dial the phone number in that location.

## 5.5 – ALTERNATIVE NUMBER DIALLING

The unit supports two types of alternative number dialling - Local & Global.

In order to activate this feature, the No Answer timer command <1541> has to be set to a value greater than zero (typically approximately 10 seconds)

### Local:

There are two alternative numbers associated with each phone book location (entry).

### Global:

The 1st global alternative number is stored using command <1501>.

The 2nd global alternative number is stored using command <1502>.

NOTE: Global alternative numbers take precedence over the local alt. numbers.

Setting command <1501> to zero will disable global alternative dialling for this location.

Setting command <1502> to zero will disable global alternative dialling for this location.

## 5.6 – PROGRAMMING MODE

The unit can be programmed by several ways.

### 1.) Local Keypad Programming:

- A.) Using the rear keypad the unit will enter into programming mode by pressing the 'D' key twice, a voice message will be played upon entering this mode.
- B.) The unit will exit programming by pressing the 'D' key twice.
- C.) The unit will exit programming mode after 12 seconds if there was no keypad activities during that period.

### 2.) Remote DTMF Programming:

- A.) Dual-Tone Multi-Frequency signalling (DTMF), is an in-band voice signalling which is generated by pressing the keypad keys.
- B.) The remote party can use this feature to program the unit remotely while in conversation mode.
- C.) The remote party can initiate any programming command sequences by entering `#programming-code#programming-command-sequence##`
- D.) Programming code can be modified using command `<1520>`
- E.) When using a command sequence for interrogation (get), the remote party will hear the result/output of that command.
- F.) The remote party will hear a confirmation voice message when using a command sequence to set a certain values.

### 3.) Remote SMS Programming:

- A.) Short Message Service (SMS) is a text messaging service component of phone.
- B.) The remote party can initiate any programming command sequences by entering `#programming-code#programming-command-sequence##`
- C.) Programming code can be modified using command `<1520>`
- D.) When using a command sequence for interrogation (get), the remote party will receive an SMS of the result/output of that command.
- E.) The remote party will receive a confirmation SMS message when using a command sequence to set a certain value.
- F.) By default the SMS will be replied to the sender unless an alternative number is specified using command `<1503>`.

Example: Program call timer to 20 sec duration: `#1234#1540#20##`

## 5.7 – SLEEP MODE

The unit is designed to go into a power saving mode (Sleep), by setting command “0” to a value greater than zero. The unit will go into sleep mode if there were no activities (key press, voice call, programming mode) for the duration of the sleep timer (command `<0#duration###>`).

During sleep mode the unit will not be able to receive incoming voice calls or SMS.

The unit can be taken off sleep mode by pressing any of the keypad or the speed dial buttons.

During sleep mode the unit will consume around 400  $\mu$ A.

In some circumstances, some SIM card and some mobile network takes longer to register. Please increase the value of the SIM check retries option and the network registration timer option `<1534>` and `<1535>` respectively.

Command	Read	Write	Default Value	Unit
0	0#*##	0#Number##	0 (Disabled)	Minutes

## 5.8 – SIGNAL QUALITY

Execution of command <1529#\*##> returns received signal strength indication “rssi” (Radio freq strength). A value between 15 to 30 is commonly encountered, and will provide sufficient signal strength.

### RSSI Defined values

0	-113 dBm or less
1	-111 dBm
2 .... 30	-109 ... -53 dBm
31	-51 dBm or greater
99	Not known or not detectable

## 5.9 – INITIALISATION OF THE DEFAULT SETTINGS

Command	Read	Write	Description
1666	1666#*##		Read the current network time and firmware version.  Reply sequence: time*firmware version
		1666#0##	Clear the phonebook. (Locations 1 - 1000)  Cannot clear or read phonebook if SIM is not installed, or is disabled.  Does not clear SMS reply no. In location 1503. Does not clear alternative numbers in locations 1501 & 1502. Does not clear hotline No. In location 1500.
		1666#1##	Load default configuration. (Timers, programming PIN, Global Alternative Nos, Hotline No, Keyless entry Nos, Relay code, Speed dial, SMS reply no.). Does not clear the phonebook Does not default audio settings
<b>Please Note:</b> If the unit is re-programmed to factory default using option 1666#2##, <b>Option 1530 must be programmed manually to ‘63*2’</b> Eg: 1530#63*2##		1666#2##	Load default configuration (as above) & Load default factory settings for RF module (Default audio settings (options 1530-1544))  Perform software restart. Does not clear the phonebook
		1666#3##	Perform software restart.  No settings changed. Does not clear phonebook.





## 5.10 – SIM CARD

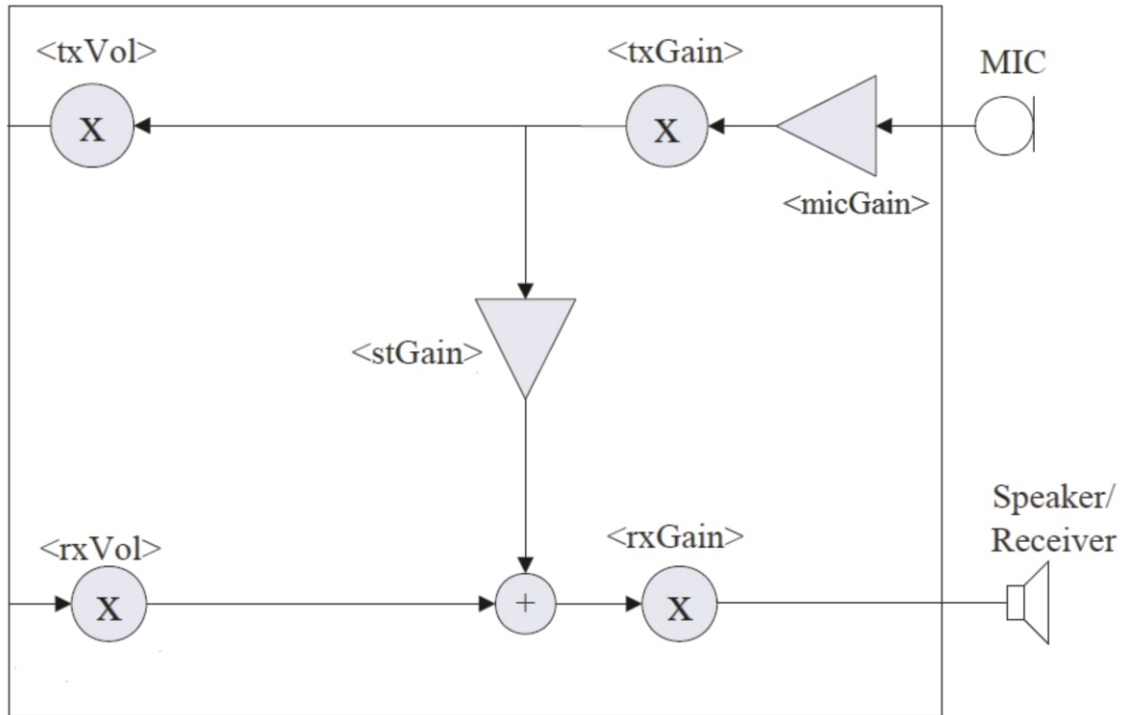
A subscriber identity module or subscriber identification module (SIM) is an integrated circuit that is intended to securely store the international mobile subscriber identity (IMSI) and the related keys used to identify and authenticate subscribers on a mobile network.

The unit SIM holder supports mini-SIM (or 2FF) card, which has the same contact arrangement as the full-size SIM card and is normally supplied within a full-size card carrier, attached by a number of linking pieces. The unit allows the user to configure/modify the security settings of the SIM card.

The following commands are used to interact with SIM card.

Command	Read	Write	Description
1555	1555#*##		Read the status of the SIM 0 =: Ready 1 =: SIM card failure 2 =: PIN 1 required 3 =: PUK 1 required 4 =: PIN 2 required 5 =: PUK 2 required 6 =: SIM card busy
1555		1555#0*[PIN ID]*PIN*Enable##	Enable/Disable SIM PIN  PIN ID: 0 =: PIN 1 1 =: PIN2 Enable: 0 =: Disable 1 =: Enable
1555		1555#1*[PIN ID]*OldPIN*NewPIN##	Change SIM PIN  PIN ID: 0 =: PIN 1 1 =: PIN2 The PIN is restricted to 4 digits
1555		1555#2*[PIN ID]*PUK*NewPIN##	Unblock SIM PIN  PIN ID: 0 =: PIN 1 1 =: PIN2
1555		1555#3*[PIN ID]*NewPIN##	Store SIM PIN  PIN ID: 0 =: PIN 1 1 =: PIN2 The PIN is restricted to 4 digits
1556	1556#*##		Reply Sequence:  PIN1 retries left*PIN1 unlock retries left*PIN2 retries left*PIN2 unlock retries left

## 5.11 - AUDIO SETTINGS



**DDCGSM** provides some commands for audio tuning. The following section describes how to setup and tune the audio part for best performance. The audio programming model in the above diagram shows how the signal path can be influenced by varying commands parameters.

1.) Command <1547>: micGain. With this command you can change the first stage of the MIC. Amplify value number which is from 0 to 1. 0 is 0DB and 1 is 24DB.

2.) Command <1548>: txGain. The command is used to set audio path parameter TX gain. Gain value is a number, Range: from 0 to 65535.

3.) Command <1550>: txVol. The command is used to set audio path parameter TX volume. Volume value is a number, Range: from 0 to 65535.

4.) Command <1551>: rxVol. The command is used to set audio path parameter RX volume. Volume value is a number, between -100 and 100. To enter a negative value use '\*'.  
e.g. 1551#50##

5.) Command <1549>: rxGain. The command is used to set audio path parameter RX gain. Gain value is a number, between 0 and 65535.

6.) Command <1553>: This command is used to select the echo cancellation mode:

**The following are the defined modes.**

- 0 : disable EC mode.
- 1 : EC mode recommended for HANDSET.
- 2 : EC mode recommended for HEADSET.
- 3 : EC mode recommended for HANDSFREE.
- 4 : EC mode recommended for SPEAKER.
- 5 : EC mode recommended for BLUETOOTH HEADSET.
- 6 : EC mode recommended for aggressive SPEAKER.
- 7 : EC mode recommended for medium SPEAKER.
- 8 : EC mode recommended for least aggressive SPEAKER.

---

## 5.11 – AUDIO SETTINGS CONTINUED

- 7.) Command < 1554>: This command is used to enable/disable noise suppression. The default value is enabled.  
0 : disable this feature.  
1 : enable this feature.
- 8.) Command < 1552>: The command is used to set digital attenuation of sidetone  
Range: from 0 to 65535.  
Factory value: HANDSET:4000, SPEAKER PHONE:16384..
- 9.) Command < 1546>: The command is used to select the incoming call ringer sound level of the device.  
The value of level will be saved to non-volatile memory after write command is executed.
- 10.) Command < 1545>: The command is used to select the volume of the internal loudspeaker audio output of the device.  
Range: from 0 to 8.
- 11.) Command < 1544>: The command is used to set audio path parameter RX volume; this command is different from rxVol <1551>, command rxVol <1551>, will modify the values of all sound levels offset we provided together. With this command you can change the value of each sound internal level.

There are currently 8 levels.

The levels are numbers, from -5000 to 5000. To enter a negative value use 'C'.

NOTE 1: Currently level 7 and level 8 are the same, which means the value set for one level also will set for the other automatically(they have the same values).

NOTE 2: The Handset audio settings only valid when using a unit with Handset. The user should use the handset to set these settings.

- 12.) During conversation mode the user can toggle MIC mute by pressing key [7], and can also toggle SPEAKER mute by pressing key [1]. (For units with keypad fitted).
- 13.) Command <1530>: The command is used to configure the audio codec mode(GSM codecs, WCDMA Codes)  
Defined values for the GSM Codecs:  
Range is 1~63 Sum of integers each representing a specific codec mode, default value is 63 (all codecs).  
1 GSM FR  
2 GSM HR  
4 GSM EFR  
8 GSM FR AMR  
16 GSM HR AMR  
32 GSM FR AMR-WB

Defined values for the WCDMA Codecs:

Range is 1~7 Sum of integers each representing a specific codec mode, default value is 7.

- 1 UMTS AMR
- 2 UMTS AMR2
- 4 UMTS AMR-WB

Example: 1530#31\*3##

This will enable GSM codecs (1, 2, 4, 8, 16) and also enables WCDMA codecs (1,2).

---

## 6.0 RELAY OPTIONS

This model has only one relay fitted (Relay 1).

### 6.1 - REAR KEYPAD

During programming mode the relay can be triggered by entering specific command sequence <1533>

Command sequence: 1533#1\*time##

(1 = Relay 1)

Time is in seconds

Setting the **time option to 0** will turn off the relay permanently.

Setting the **time option to 1** will turn on the relay permanently. Other values will turn it on for that duration.

Example: 1533#1\*4## (relay is 'ON' for 4 secs.)

### 6.2 - SMS RELAY OPERATION

The relay can be triggered by sending specific command sequence <1533> via SMS.

Command sequence: #programming code#1533#1\*time##

(1 = Relay 1)

Time is in seconds

Setting the **time option to 0** will turn off the relay permanently.

Setting the **time option to 1** will turn on the relay permanently. Other values will turn it on for that duration.

Example: #1234#1533#1\*1## (relay is on permanently).

### 6.3 - KEYLESS ENTRY RELAY OPERATION

For units with front keypad it can support 10 Keyless Entries. The keypad keys are used to enter the keyless codes by pressing the <\*> key followed by the access code.

The keyless entry codes are stored using command <1505> to <1514>.

Command sequence: range [1505-1514]#code##

Example: 1506#1234##

The user can delete the codes using command <1515> followed by the keyless entry location

<1515#[1505-1514]##>

Example: 1515#1511##

A blank keyless entry location will return 'minus' if the location is read. E.g. 1505#\*## will return 'minus' if blank

### 6.4 - DTMF RELAY OPERATION

1.) In conversation mode, the relay can be activated whenever a valid string of DTMF digits that was sent matches the relay code in option <1521>.

2.) Receiving too large audio gain may result in DTMF distortion. If someone finds DTMF receiving distortion, then the audio receiving parameters has to be adjusted to get better DTMF performance.

3.) The audio codec has a great effect on the receiving DTMF. If someone fails to receive DTMF signal, then option <1530> has to be adjusted.

### 6.5 - CLI RELAY OPERATION

Relay can be triggered by setting the CLI option in the phonebook command. Please refer to section 5.1 (Phonebook).

### 6.6 - BUTTON RELAY OPERATION

Relay can also be triggered by setting the button option in the phonebook command. Please refer to section 5.2 (Button Operation).





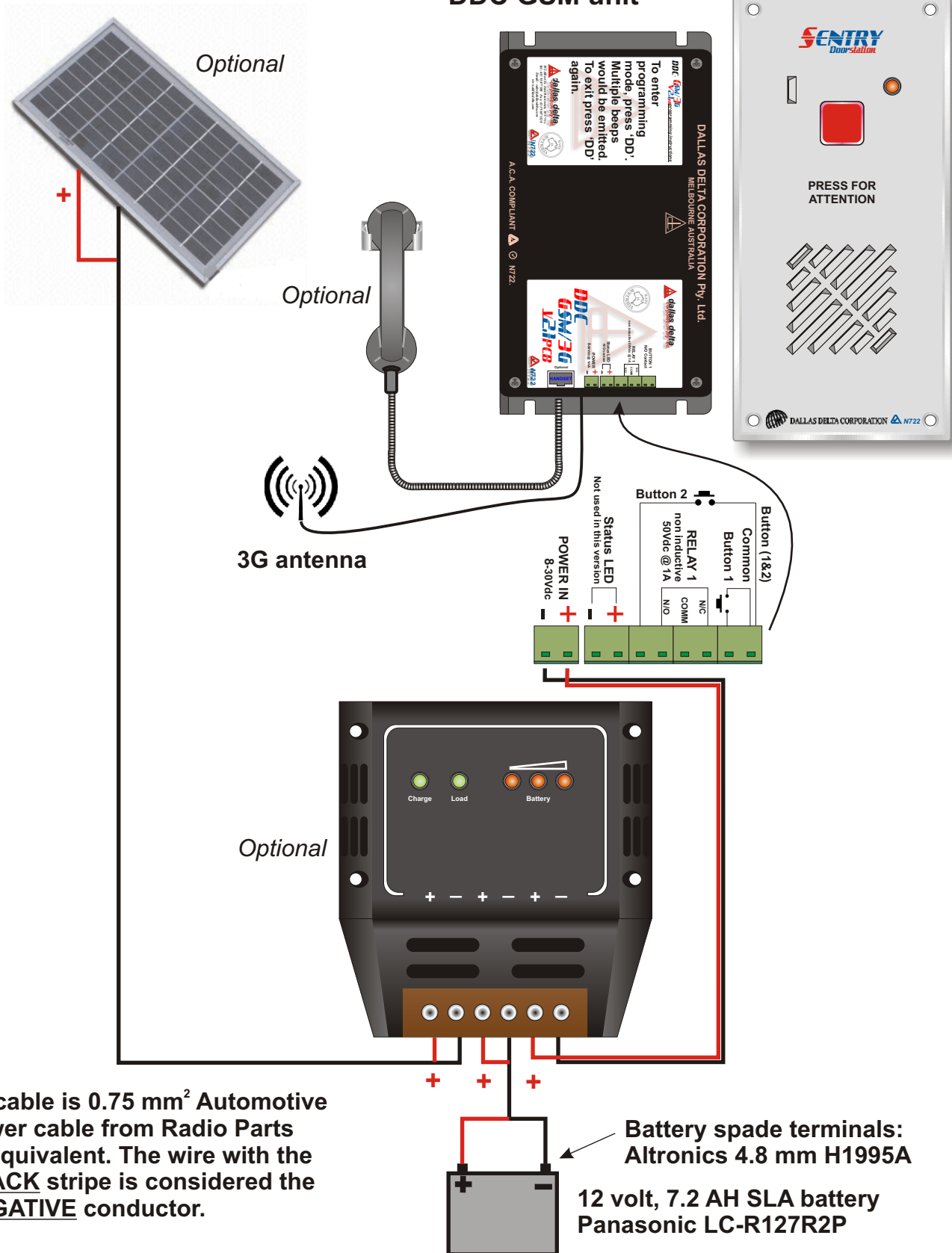
## 7.0 USER PROGRAMMABLE OPTIONS

Location (option)	Sample Syntax	Value/Range	Default Value	Description
0	0#Value##	Value in minutes	0 (disable)	Sleep timer
1 - 1000	99#Phone Number##	Up to 16 digits	Undefined	Phonebook
1500	1500#Phone Number##	Digits (0=disable)	0 (disable)	Hotline Number
1501 - 1502	1501#Phone Number##	Digits (0=disable)	0 (disable)	Global Alternative Numbers
1503	1503#Phone Number##	Digits (0=disable)	0 (disable)	SMS reply number
1504				Reserve
1505 - 1514	1505#code##	Digits	-	Keyless Entries
1515	1515#Value##	Loc 1505 - 1514	Write only	Delete Keyless Entries
1516				Reserve
1517				Reserve
1518				Reserve
1519				Reserve
1520	1520#code##	Digits	1234	Programming PIN code
1521	1521#code##	Digits	1234	Relay Code
1528	1528*##			Reads battery voltage
1529	1529*##	Refer to section 5.8		Reads signal strength
1530	1530#Value##	Refer to section 5.11	31*7	Audio Codecs
1531	1531#ring count##	Number of rings	2	Autoanswer
1532	1532#digit count##	Number of digits	0 (disable)	Speed Dial
1533	1533#relayno*time##	[1]*seconds	Write only	Relay Activation (via sms)
1534	1534#retries count##	Numbers	4	SIM check retries
1535	1535#retries count##	Numbers	4	Network Registration Retries
1536	1536#value##	0 - 1	0 (disable)	Enable SMS notification of relay activation
1537				Reserve
1538				Reserve
1539				Reserve
1540	1540#Seconds##	Seconds	0 (disable)	Call timer
1541	1541#seconds##	Seconds	0 (disable)	No answer timer
1542	1542#seconds##	Seconds	4	Relay timer
1543	1543#seconds##	Seconds	5	Dial timer
1544	1544#Value##	Refer to section 5.11		Audio path parameter
1545	1545#Value##	0 - 8	2	Loudspeaker volume
1546	1546#Value##	0 - 8	2	Ringer sound level
1547	1547#Value##	0 - 1	1 (enable)	Mic amplifier gain
1548	1548#Value##	0 - 65535	8000	Transmit gain
1549	1549#Value##	0 - 65535	16384	Receive gain
1550	1550#Value##	0 - 65535	35000	Transmit volume
1551	1551#Value##	-100 to 100	0	Receive volume
1552	1552#Value##	0 - 65535	0	Side tone level
1553	1553#Value##	Refer to section 5.11	6	EC mode
1554	1554#Value##	0 - 1	1 (enable)	Noise suppression
1555	1555#Value##	Refer to section 5.10		SIM card status
1556	1556*##	Refer to section 5.10		Reads number of retries
1666	1666#Value##	Refer to section 5.9		Factory default

## 8.0 WIRING DIAGRAM

5 watt solar panel

DDC GSM unit



All cable is 0.75 mm<sup>2</sup> Automotive power cable from Radio Parts or equivalent. The wire with the **BLACK** stripe is considered the **NEGATIVE** conductor.

Battery spade terminals:  
Altronics 4.8 mm H1995A

12 volt, 7.2 AH SLA battery  
Panasonic LC-R127R2P

Fig 12



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## 9.0 SPECIFICATIONS

The DDC GSM module is a quad-band GSM/GPRS/EDGE and dual-band UMTS /HSDPA that works on frequencies;

GSM;

- GSM 850MHz
- EGSM 900 Mhz
- DCS 1800 Mhz
- PCS 1900 Mhz

WCDMA;

- WCDMA 850 MHz
- WCDMA 900 Mhz
- WCDMA 1900 Mhz
- WCDMA 2100 Mhz

HSPA;

HSDPA

Antenna:

3G

Panel-mount with right angle FME connector.

Antenna cable 5m, terminated with male SMA and female FME connectors.

### Power requirements:

**Talking:** Typical 305 mA (peak).

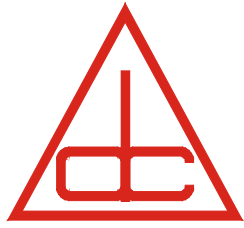
**Active:** Ready to make and receive calls, LED blink once per second: 25 milliamps average.

**Sleep Mode:** LED off < 400 microamps average.

**Battery disconnect:** 11.1 volts

**Battery re-connect:** 12.6 volts





**dallas delta**  
**corporation pty. ltd.**

*102 Albert St. East Brunswick, 3057 Vic.*

*Tel: 613 93877388 Fax: 613 93873128*

*Email: sales@dallasdelta.com*

*www.dallasdelta.com*

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**Prisoner Phone Monitor Systems**  
**Security Door phones**  
**Door phones**  
**Loud Ringer Horns**  
**High Voltage Line Isolators**  
**Loudspeaking Telephones**

**and**  
**they're**  
**All**

